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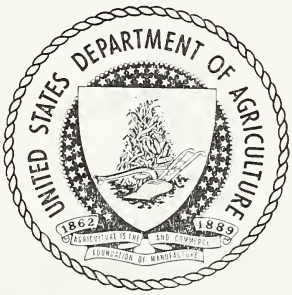

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87TH CONGRESS, 1st Session
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THE TIMBER RESOURCES OF WEST VIRGINIA

AND

A REPORT ON THE NATIONAL FORESTS OF WEST VIRGINIA

REPORTS PREPARED BY THE FOREST SERVICE OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

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S. Res. 137

IN THE SENATE OF THE UNITED STATES,
June 16, 1961.

Resolved, That there be printed with illustrations as a Senate document two reports entitled (1) "The Timber Resources of West Virginia" and (2) "A Report on the National Forests of West Virginia", prepared by the United States Forest Service at the request of Senator Robert C. Byrd of West Virginia.

Attest:

FELTON M. JOHNSTON,
Secretary.

16222

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THE TIMBER RESOURCES OF WEST VIRGINIA

(MARCH 1961)

FOREWORD

This is an attempt to make available to the people of West Virginia, as well as to those others who may be interested in West Virginia's future, significant information relating to the timber resources of the State—information which could be useful in the planning of conservation programs, reforestation work, timber-stand improvement, or as a guide to the establishment of a wood products industry.

To be assessed from the facts, figures, charts, and graphs in the following pages, is the tremendous economic promise to be fulfilled for West Virginia, if the State's renewable natural resources—its forest lands—are wisely developed and utilized.

As a whole, this survey, which was prepared by the U.S. Forest Service at my request, points to the fact that West Virginia's timber resources are new frontiers of economic opportunity for the bold and the imaginative.

ROBERT C. BYRD, *U.S. Senator.*

THE TIMBER RESOURCES OF WEST VIRGINIA

West Virginians make no secret of the fact that they are looking for new sources of employment and income. The established industries that have supported their economy in the past are declining. The lumber industry that produced almost 1.5 billion board feet in 1909 has dropped to less than 400 million board feet in 1959. Coal mining has declined from 170 million tons just after World War II to 120 million in 1960, and mining employment dropped from 120,000 to 43,000 in this period. The population of the State was 150,000 less in 1960 than a decade earlier. New industries have been located in the Kanawha and Ohio Valleys, but they have not filled the gap.

West Virginia is a land of mountains and streams and forests. But the forests are by no means as prominent in the economy of the State as they are in the landscape. To find the reason for their present limited contribution to the industrial life of the State and to appraise their potential contribution, attention must first be turned to the resources themselves.

Chapter I—The Present Resource

WEST VIRGINIA IS WELL FORESTED

In terms of forest land area, West Virginia is a well-forested State. Nearly two-thirds of its 15.4 million acres of land are in forests. And all but some 50,000 acres of this is commercial forest land—available for commercial logging and capable of producing usable crops of wood (table 1).

Table 1.—*Land area in West Virginia, by major classes of land, 1953*

Class of land	Area	
	Thousand acres	Percent
Forest:		
Commercial	9,860	64
Noncommercial:		
Productive but reserved	41	
Unproductive	6	
All forest land	9,907	64
Nonforest:		
Pasture	3,113	21
Cropland	1,567	10
Other	824	5
All nonforest land	5,504	36
All land	15,411	100

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These 10 million acres of forest land have a great potential for growing valuable timber crops, but this potential is not being realized. In a large part this is due to the low level of healthy and vigorous trees brought about by heavy cutting and fires. Over the years, cutting operations removed most of the high-quality timber. Repeated fires killed young growth and damaged larger trees, making them ready hosts for damaging diseases and insect pests. What was left and what nature was able to restore is West Virginia's heritage today.

Only half the forest land supports sawtimber stands (table 2) and less than a sixth of the forest land carries sawtimber stands of more than 5,000 board feet to the acre.

TABLE 2.—*Commercial forest land area in West Virginia, by stand-size class, 1953*

Stand-size class	Area	
	Thousand acres	Percent
Sawtimber stands	4,862	50
Poletimber stands	3,298	33
Seedling and sapling stands	1,462	15
Nonstocked and other areas	238	2
All classes	9,860	100

The ownership pattern in West Virginia may help to explain the present condition of the forest. Ten percent of the commercial forest land is in public ownership (the national average is 27 percent) and only 2 to 3 percent is held by forest industries in contrast to some 13 percent for the national average. Most of the forest area is in small private ownerships. More than 40 percent of the privately owned forest area is in holdings of less than 100 acres, and almost two-thirds, held by some 132,000 owners, is in tracts under 500 acres in size (fig. 1). These owners face the greatest challenge but also the greatest opportunity to increase production from forest land.

PRIVATE OWNERSHIP PREDOMINATES

The forest lands in public ownership and lands held by wood-using industries are in relatively good productive condition. In general, the smaller the ownership the lower the present level of productivity.

WEST VIRGINIA IS HARDWOOD COUNTRY

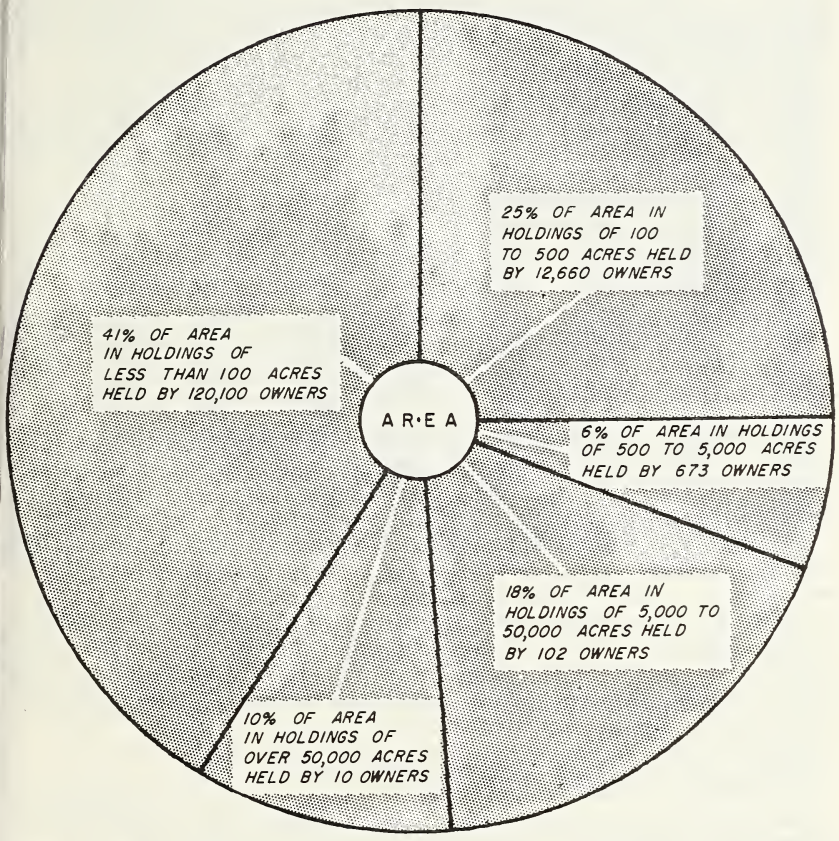
Nine out of every ten acres of forest land in the State are dominated by hardwoods. And the oak species prevail on half the forest land.

The red oak type is the most extensive (32 percent of the forest area). Originally confined to the middle slopes of the mountains, chiefly on southern and southwestern exposures, it has occasionally invaded the lower slopes but has seldom climbed on the ridge tops.

White oak occupies 9 percent of the forest area. It is usually found on the richer, well-drained lower slopes, especially southern slopes. This species commonly occurs in almost pure stands but also in mixtures with red oak and hickory.

FIGURE 1

DISTRIBUTION OF PRIVATELY-OWNED COMMERCIAL FOREST LANDS IN WEST VIRGINIA


25% OF AREA IN HOLDINGS OF 100 TO 500 ACRES HELD BY 12,660 OWNERS
41% OF AREA IN HOLDINGS OF LESS THAN 100 ACRES HELD BY 120,100 OWNERS
AREA
6% OF AREA IN HOLDINGS OF 500 TO 5,000 ACRES HELD BY 673 OWNERS
18% OF AREA IN HOLDINGS OF 5,000 TO 50,000 ACRES HELD BY 102 OWNERS
10% OF AREA IN HOLDINGS OF OVER 50,000 ACRES HELD BY 10 OWNERS

Chestnut oak (9 percent), on the other hand, grows on the higher slopes and ridge tops where the soil is dry and thin and rocky. Here it has escaped the competition of the faster growing but less hardy species.

One-fifth of the State's forest land is classed as the yellow poplar type. This includes old fields that have reverted to almost pure yellow poplar stands as well as the better known cove hardwood stands.

Sixteen percent of the forest land is in the sugar maple-beech-yellow birch type. It occurs most commonly in the northern part of the State in the plateau country, but is also found in the south on sites similar to those occupied by the yellow poplar mixture.

Of the softwood acreage (9 percent) the most extensive type is the southern yellow pine-oak type. There is a scattering of spruce types in the high altitudes and some hemlock in the moist stream bottoms.

SAWTIMBER STANDS ARE NOT EVENLY DISTRIBUTED

Sawtimber trees are softwood trees 9 inches and larger in diameter at breast height and hardwood trees 11 inches or larger. They must be trees of commercial species and contain at least one merchantable sawlog. In West Virginia there are some 18.5 billion board feet of this material in live trees and another 1.3 billion in salvable dead trees (table 3).

TABLE 3.—*Net volume of live sawtimber in sawtimber stands and net volume of salvable dead sawtimber on commercial forest land, by softwoods and hardwoods, in West Virginia, Jan. 1, 1953*

[In millions of board feet]

Class of material	Softwoods	Hardwoods	Total
Live sawtimber:			
Sawtimber stands	1,285	14,932	16,217
Other stands	250	2,030	2,280
Total	1,535	16,962	18,497
Salvable dead sawtimber		1,328	1,328

The location of this sawtimber is of importance to the present or prospective industries that need it as raw material. It is not spread evenly over the State; it is concentrated in a few areas. Nearly half the sawtimber volume is found on 14 percent of the forest area.

The dominance of the hardwoods is seen in the distribution of the sawtimber volume by species. Ninety-two percent of it is in the hardwood species, and of these the oaks are the most abundant. Red oak accounts for more than one-fourth of the total volume. Three other valuable species—white oak, sugar maple, and yellow poplar—have more than a billion board feet each. The hickory and beech, also with more than a billion feet each, are less prized commercially. Softwoods are of minor importance.

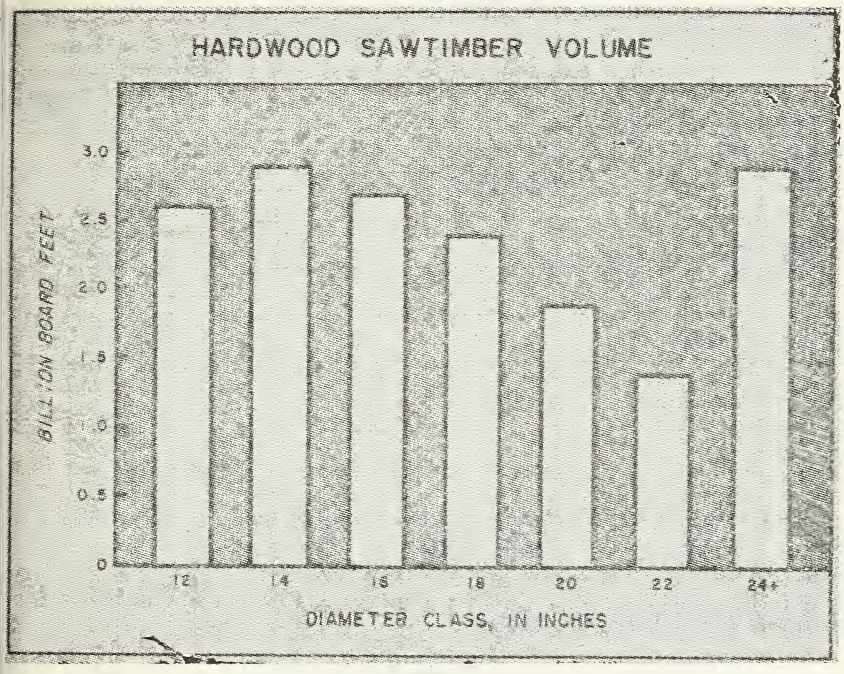
Sawtimber trees are small and not of high quality

In addition to the volume, species, and location of sawtimber, industry is interested in the size and the quality of sawtimber trees. These factors determine in large measure the type and value of products that can be made. In hardwoods especially, low-quality sawtimber means low returns to both landowner and processing plant.

In general, sawtimber trees of West Virginia are not very large. Half of the sawtimber volume is in trees less than 17 inches in diameter (fig. 2). Only 9 billion board feet is in size classes most desired by sawmills and veneer plants.

Trees may be sound and fairly well formed but still contain numerous defects that degrade the wood. The hardwood sawtimber in West Virginia has been graded according to the Forest Products Laboratory grading rules, which recognize two classes of logs: standard lumber logs and tie and timber logs.

FIGURE 2



Standard lumber logs of grades 1 and 2 are the logs that are profitable to saw into factory lumber. Yet only one-third of all the sawtimber in West Virginia was grade 1 or 2 in 1949. About two-thirds of this good sawtimber was concentrated in sawtimber stands. The rest was scattered through poor stands where the logger could obtain only one log or so per acre. In short, there was only about 4 billion board feet of high quality sawtimber in stands readily operable for sawlogs alone.

GROWING STOCK INCLUDES BOTH SAWTIMBER AND POLETIMBER TREES

In addition to sawtimber trees the forest contains two other classes of material. One is the portion of the cubic volume of wood found in cull trees, and cull sections of sawtimber and poletimber trees. The second is the net volume of poletimber trees—trees of commercial species that meet regional specifications of soundness and form and are of the following diameters at breast height: softwoods, 5 to 9 inches; hardwoods, 5 to 11 inches. The net volume of the sawtimber and poletimber trees together is called the growing stock.

Growing stock of all species total almost 8 billion cubic feet. Considered as pulpwood, this equals 98 million cords (table 4). About 40 percent of the growing stock volume is in poletimber trees and 60 percent in sawtimber trees.

TABLE 4.—*Net volume of growing stock on commercial forest land in West Virginia by class of material and softwoods and hardwoods, Jan. 1, 1953*

Class of material	Growing stock	
	Million cubic feet	Million cords
Sawtimber trees:		
Softwoods	413	5.0
Hardwoods	4,311	54.0
Total	4,724	59.0
Poletimber trees:		
Softwoods	193	2.0
Hardwoods	2,947	37.0
Total	3,140	39.0
All growing stock trees:		
Softwoods	606	7.0
Hardwoods	7,258	91.0
Total	7,864	98.0

GROWTH EXCEEDS CUT IN WEST VIRGINIA'S FORESTS

West Virginia's timber reservoir is beginning to fill up again (tables 5 and 6, fig. 3). Net annual sawtimber growth has been more than twice the annual cut, and net annual growth of growing stock has been four times the cut. This excess of growth over cut holds for both softwoods and hardwoods.

FIGURE 3

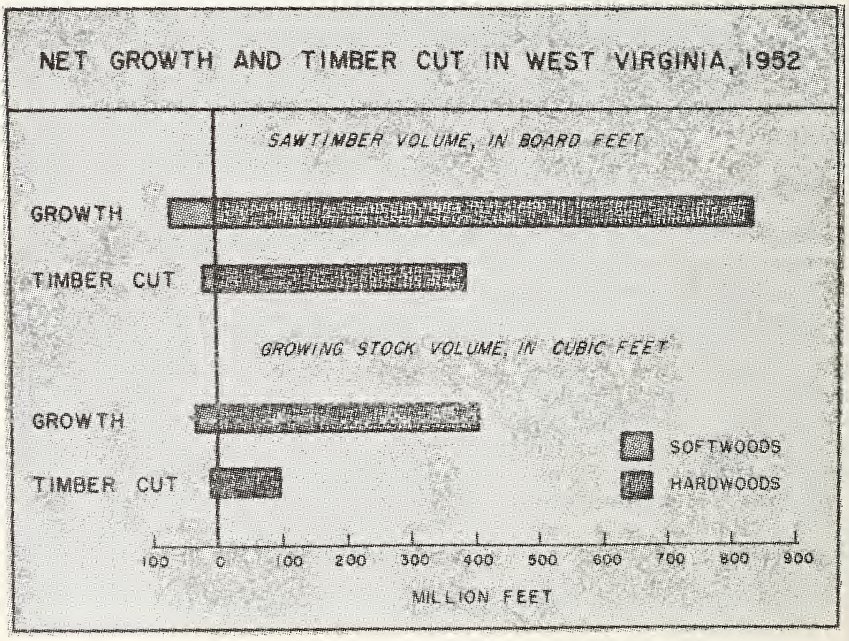


TABLE 5.—*Net annual growth of sawtimber and growing stock on commercial forest land in West Virginia, by species group, 1952*

Species group	Sawtimber	Growing stock
	Million board feet	*Million cubic feet*
Softwoods:		
White, red, and jack pine	13	3
Southern yellow pine	29	14
Spruce-fir	12	5
Other softwoods	18	5
Total, all softwoods	72	27
Soft hardwoods:		
Yellow poplar	60	31
Other soft hardwoods	74	7
Total	134	38
Hard hardwoods:		
Oaks	392	174
Beech-yellow birch-hard maple	191	74
Other hard hardwoods	119	121
Total	702	369
Total, all hardwoods	836	407
Total, all species	908	434

TABLE 6.—*Timber cut from sawtimber and growing stock in West Virginia by selected products and softwoods and hardwoods, 1952*

Timber products	Softwoods	Hardwoods	Total
	Thousand board feet		
Sawlogs	22,495	331,561	354,056
Pulpwood	1,347	12,330	13,677
Veneer logs and bolts		2,531	2,531
All other products	19	43,269	43,288
Total sawtimber cut	23,861	389,691	413,552
	Thousand cubic feet		
Sawlogs	5,191	72,312	77,503
Pulpwood	981	6,130	7,111
Veneer logs and bolts		530	530
All other products	30	23,674	23,704
Total growing stock cut	6,202	102,646	108,848

At first glance this appears to be most encouraging. But it may also be misleading. Simply producing cellulose is not enough to support most industries. The size and quality of the trees on which this excess growth occurs hold the key to the forest industries' future.

Growth-cut balances mask the fact that operable volumes of timber that will yield high-grade lumber are diminishing. As the better trees are removed in logging, trees of poor form, trees of the less desirable species, and trees affected by disease have taken their place, and this is not going to help the lumber industry in the coming years. To provide the right kind of future raw material poor trees must be removed and excess growth put on future crop trees.

LUMBER MANUFACTURING IS THE PRINCIPAL FOREST INDUSTRY

At one time the deep coal mines of West Virginia were the largest consumer of forest products. At the time when their production was around 150 million tons annually, they needed an estimated 5 board feet of round timber and lumber for props, headers, wedges, ties, etc., for every ton of coal mined, or an annual total of some 750 million board feet. But today with deep-mine coal production down to around 110 million tons, and with metal replacing part of the wood needed in deep mines, the annual consumption of wood in mining may be no more than 250 million board feet.

Sawmills are now the largest users of timber, though lumber production also is declining (fig. 4). In 1952 sawlogs made up 86 percent of the total sawtimber cut, and 71 percent of the cut of growing stock (table 6). Other products from the forest included pulpwood, fuelwood, veneer and cooperage bolts, posts, piling, charcoal wood, ties, and turnery stock. The 1952 cut was concentrated on relatively few forest acres. Oak trees supplied nearly half the timber products removed, followed by yellow poplar and sugar maple.

One reason why West Virginia's forests contribute so little to manufacturing employment (around 10 percent of the State total) is found in the limited use and degree of processing of the harvested trees. One-eighth of the annual timber cut is logging residue. Another fourth is marketed as fuelwood or other round products that require little processing. And even the raw material used in manufacturing plants is not supporting West Virginia industry as it might. An estimated 75 percent of the lumber produced in the State is sent out of the State as lumber, much of it for remanufacture in the factories of neighboring States. And all of the pulpwood produced leaves the State in that form. West Virginia's economy could use the employment its products help provide in neighboring States.

Chapter II—Building Up the Timber Resource

Building up a timber resource benefits a community or region in the same way as building a factory does. It provides markets for materials and labor during the construction process, and then provides permanent employment opportunities after the facility goes into production. A forest, moreover, can provide products while it is being built up.

This chapter deals with the employment opportunities that might be associated with improvement of West Virginia's forests. Without attempting to recommend a program, it will show what labor would be required to carry out a comprehensive program for forest rehabilitation.

The assumed goal is an annual growth and cut of 300 board feet of sawtimber per acre per year, plus 30 cubic feet of material of less than sawtimber size. Present annual growth of sawtimber is less than 100 board feet per acre.

To achieve this growth goal the average stand of sawtimber would have to be increased from the present 1,800 board feet per acre to 6,000 board feet. At least 40 years would be needed to reach this level of stocking and growth.

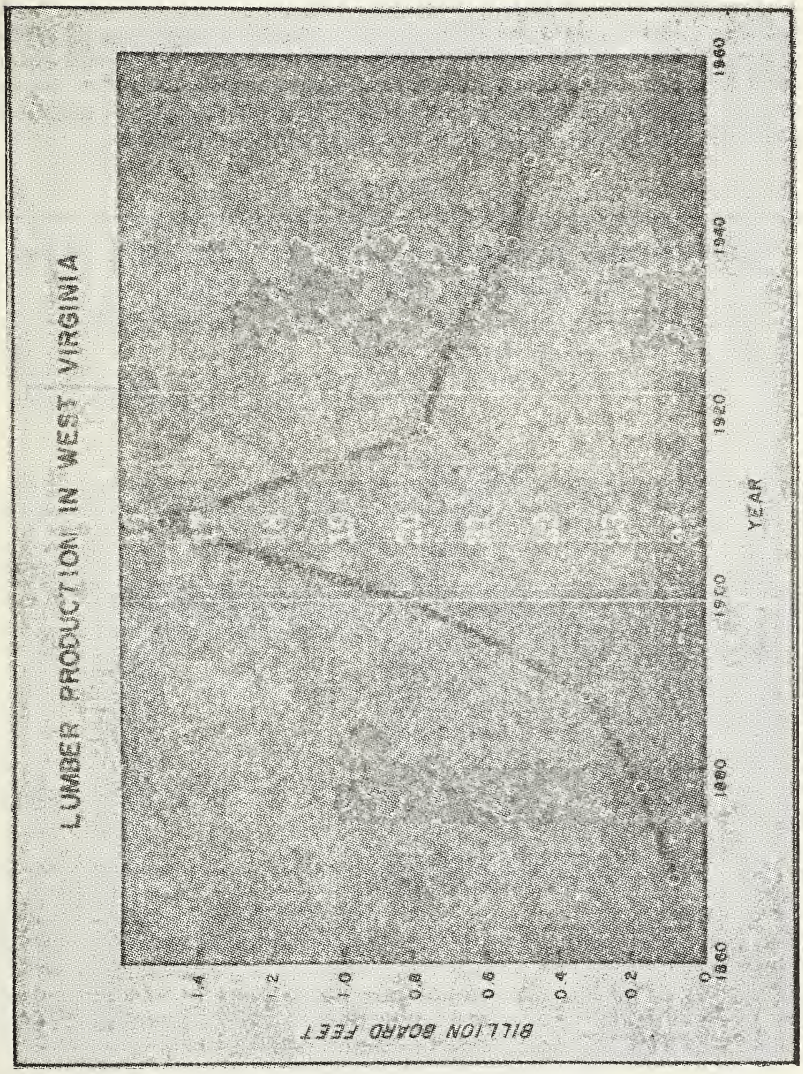


FIGURE 4

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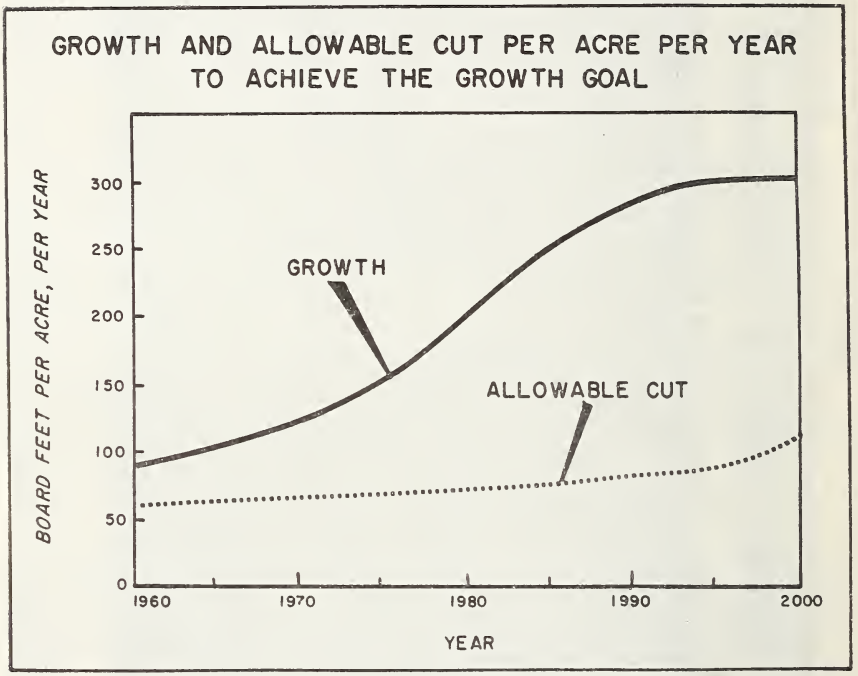
With forests in such productive condition the annual net growth and allowable cut would be about 3 billion board feet of sawtimber plus 4 million cords of material suitable for such products as pulpwood.

The present average per acre cut of 40 board feet could be increased as the sawtimber volume increased (fig. 5). The buildup in sawtimber volume would be strongly influenced by the rate of cutting and would accelerate as the margin between net growth and cut became greater. Net growth would increase as losses from fire, disease, and insects were reduced, as trees were planted and grew, and as the present trees in the stand were released from competition.

FIGURE 5



One of the requisites to increased net growth is a reduction in losses from fire. Depending on how this reduction is accomplished—through prevention or through suppression—employment might be decreased or increased. Other elements of the program, all of which would increase employment, are control measures to reduce insect and disease losses, planting, and timber stand improvement.

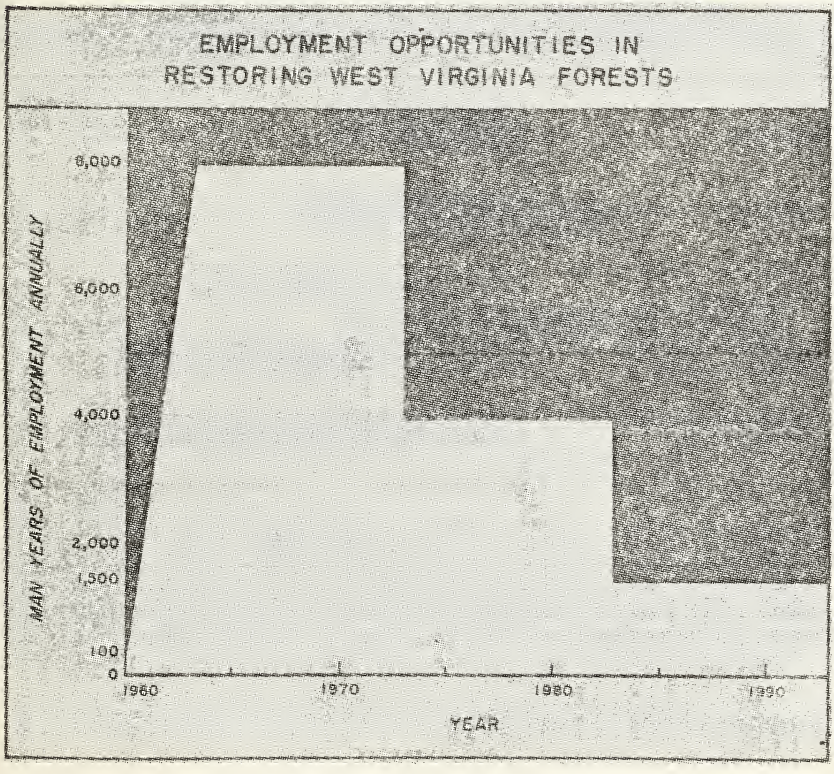
The need for these several measures would come at different times during the period of development. The planting job would be short term and limited to the areas now in need of planting. The control of insects and disease and the larger task of timber stand improvement would be continuing activities.

Timber stand improvement is especially needed to shift the productive capacity of the land to the most promising trees. It involves the killing or removal of small trees that will never become crop trees, the thinning of crowded stands to provide light and growing room for the most promising stems, and the removal of old, large trees of poor quality left over from previous logging operations.

During the first 10 years of an improvement program an average of 2 man-days per acre could be spent on timber stand improvement and insect and disease control. This would be the equivalent of 20 million man-days of work in the 10-year period, 2 million each year, or 8,800 man-years annually. At present only some 100 man-years are devoted to this work.

Figure 6 summarizes the employment that would be required to achieve the assumed growth goals. The need for labor for forest restoration would be greatest in the early years and would decline as the program neared completion. But to compensate for this decline, the allowable annual cut from the forest would increase, and this would provide more employment in harvesting and processing the greater cut from the forest. The real payoff would come when sawtimber stocking reached the desired 6,000 board feet per acre and the entire annual growth could be harvested.

FIGURE 6



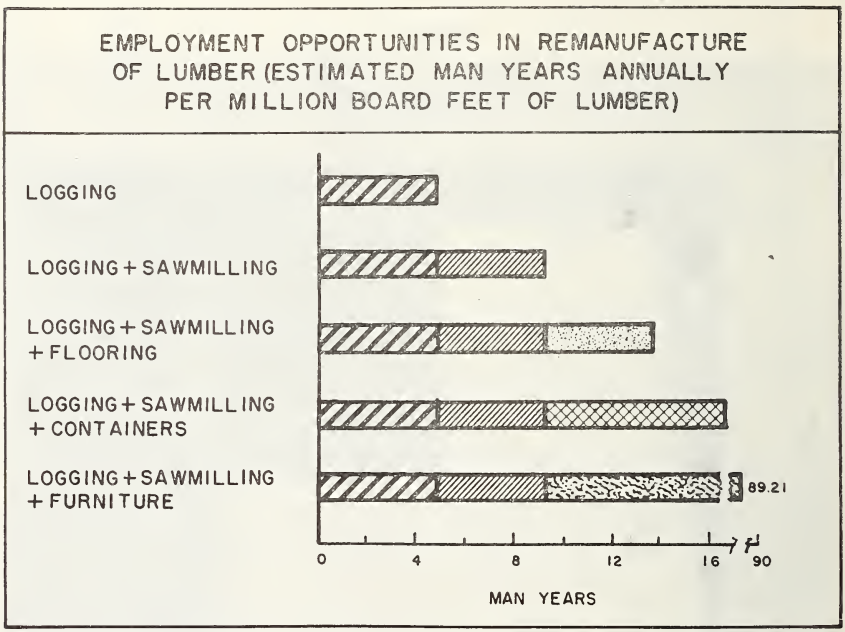
Chapter III—Fully Productive Forests and the Economy

The present timber cut in West Virginia supports about 5,000 men in the forest industries. Some 2,000 are engaged in logging operations, another 2,000 in sawmilling, and 1,000 in the manufacture of secondary wood products.

West Virginia's forest once restored would be capable of supporting a labor force many times that of the present time. Not only would there be an increase in the volume for annual harvest, but also an improvement in the quality of raw material. This improved quality of logs would provide opportunities for production of remanufactured products of high quality that would require higher labor inputs than the present container and flooring production provide.

It is impossible to predict the extent or nature of lumber remanufacture that might take place in the State if 3 billion board feet of high-quality sawtimber were available each year. But it is possible to predict the added employment that would result from the use of each million feet of lumber in remanufacture. Figure 7 shows these employment opportunities.

Figure 7



And table 7 gives an indication of the total potential employment that might be realized at different levels of remanufacturing.

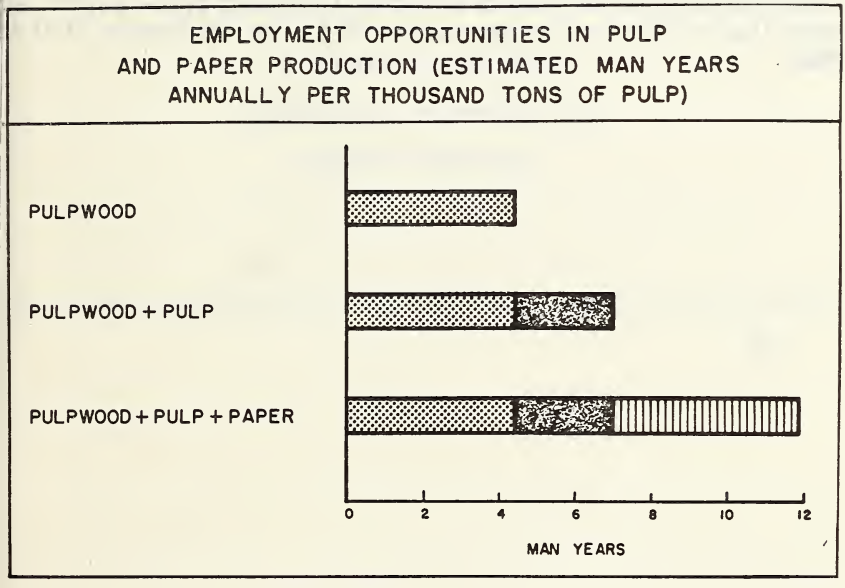
TABLE 7.—*Present and potential employment in lumber and remanufacturing industries*

[Millions of board-feet]

Processing	Number of employees, based on sawtimber cut	
	Present (400)	Potential (3,000)
1. Logging, sawmilling, present low level of remanufacturing	5,000	37,500
2. Logging, sawmilling, with medium level of remanufacturing	7,000	52,500
3. Logging, sawmilling, with high level of remanufacturing	12,000	90,000

West Virginia today has no pulp mills, and only a few paper mills that produce a mere 0.1 percent of the national paper output. But pulp and paper mills would provide an opportunity for a high level of well-paid employment. Figure 8 shows these potential employment opportunities based on each thousand tons of pulp produced.

FIGURE 8



The 60,000 cords of pulpwood produced each year at the present time are exported to mills operating in other States. Table 8 shows the employment resulting from processing this current pulpwood production, and projected employment if the potential production of 4 million cords, augmented by the equivalent of 3 million cords in the form of chips from mill residues, were all used in pulp and paper production.

TABLE 8.—*Potential employment in pulp and paper industries based on present and potential raw material supplies*

Processing	Employment opportunities based on pulpwood and chip supply	
	Present	Potential
1. Pulpwood production	250	16,500
2. Pulpwood and pulp	400	34,500
3. Pulpwood, pulp, and paper	650	64,500

If West Virginia were to adopt a program to increase employment opportunities in the forest industries and to increase the raw material supply for these industries, first efforts might be directed toward increasing the remanufacture of the lumber currently produced in the State, and the establishment of industries, such as pulp and paper plants, to utilize material now shipped out of State. Not until stands of sawtimber have been built up to much higher levels can a greatly increased annual production of sawlogs be expected. But there is a real opportunity in the interim to utilize the present timber supply in ways that will increase employment and add to the income of the State.

A REPORT ON THE NATIONAL FORESTS OF WEST VIRGINIA

15

FOREWORD

The following report, which touches lightly on that part of the George Washington National Forest which is in West Virginia, mainly treats with the Monongahela National Forest, because it is entirely within the boundaries of the State. The facts and figures related herein, together with charts and graphs, tell a remarkable success story of the work of the U.S. Forest Service—of how, in the course of relatively few years, a vast expanse of excessively cut over and fire-scarred acreage was encouraged to respond to good management and protection to the point where its value as an economic asset has been rapidly increasing for both the State of West Virginia and the Nation.

I commend this report, which was prepared by the U.S. Forest Service at my request, to the people of West Virginia, as well as to those others who may be interested in the national forests of my State.

ROBERT C. BYRD, *U.S. Senator.*

A REPORT ON THE NATIONAL FORESTS OF WEST VIRGINIA

The Forest Service of the U.S. Department of Agriculture is responsible for the protection and management of the 904,000 acres of national forest land in West Virginia. These lands were acquired by the United States under the provisions of the Weeks law of March 1, 1911, and lie within the Appalachian highlands of eastern West Virginia. Of the total, 98,000 acres adjoining the Virginia State line are managed by the George Washington National Forest, and 806,000 acres are within the boundaries of the Monongahela National Forest.

This report covers a brief history of the development of the national forests in West Virginia; the present status of their resource development and use; a look ahead to predicted use, needs, and values under sustained-yield, multiple-use management; and estimates for a program designed to further realize the capability of national forest lands to promote the economy of West Virginia and the Nation.

Part I—History and Present Status

ESTABLISHMENT OF THE NATIONAL FORESTS

The George Washington and Monongahela National Forests were established in 1918 and 1920, respectively, to protect the headwaters of navigable streams, to provide a continuous yield of timber products, and to demonstrate good forest management practices. The lands have always been managed by the Forest Service in accordance with the principles of multiple use and sustained yield. These two basic principles were endorsed by Congress in the Multiple Use Act of 1960.

The need for improved management of these lands resulted from patterns of settlement and land use practices prevalent in the 19th and early 20th centuries. Settlement took place in the early 1800's, largely by Anglo-Saxon stock who moved in from the east and north to clear small areas in the virgin forest for farms and pasture. Later, coal mining attracted workers from other States.

After the height of the lumber industry in 1909, when West Virginia led the Nation in hardwood production, many more areas were cleared for grazing by fire and "deadening." However, if these clearings did not have limestone soils, they were not successful farms.

The first efforts to establish the Monongahela followed a disastrous flood of the Ohio River in 1907, caused in part by heavy timber cutting and extensive forest fires. In 1909, section 3 of the West Virginia Code was amended to enable the United States to buy land for forest conservation.

NATIONAL FORESTS IN WEST VIRGINIA
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JEFFERSON
NATIONAL
FOREST
MONONGAHELA
NATIONAL
FOREST
Wheeling
Clarksburg
Elkins
Parkersburg
Charleston
Huntington
Bluefield

The lands purchased by the Federal Government under the Weeks Act of 1911 were cut over, burned, and badly in need of rehabilitation. The resources which depended on the soil and ground cover were depleted, reducing the economic base. The first step in restoring productivity was to protect the forest from fire. Development work including tree planting, timber stand improvement, stream improvement, game habitat improvement, recreation area development, control of land and mineral uses, improvement of livestock range, and construction of needed physical improvements followed in close order.

DEVELOPMENT, GROWTH, AND PRESENT STATUS OF RESOURCES

Programs of varying degrees of intensity have been carried out. Protection, development, and use have progressed together, resulting in significant increases in land productivity and value, in tangible and intangible receipts to the Federal and local governments, and in building a property which contributes to the local and national economies. However the full potential and capability of these lands has not yet been reached. Nor has the development of facilities, products, and services kept pace with the needs of the people. The following tables, charts, and statements trace the growth and present status of the several resources and activities supporting them.

Timber

The timber resource was badly depleted on the lands purchased for national forests in West Virginia when they were acquired. The forest had been heavily cut over and burned, leaving little in the way of a commercial timber stand. The timber sold during the thirty's averaged 562,000 board feet per year.

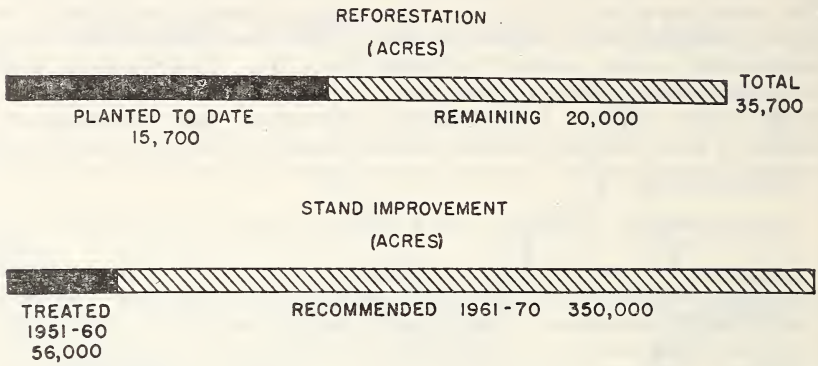
Since then, forest management and protection have effectively restored wasteland to a productive forest property. Table 1 shows this increase in productivity and the resulting contribution to the local economy.

Chart I shows the status of reforestation and stand improvement, and the work required to maintain this increased productivity program.

TABLE 1.—*Cut of timber products from national forest land in West Virginia (selected years)*

Year	Volume thousands board feet	Stumpage value in dollars
Annual average 1930–39	562	1,687
1945	14,960	89,580
1950	8,750	76,550
1955	20,060	177,800
1960	27,090	442,269

CHART 1.—STATUS OF REFORESTATION AND STAND IMPROVEMENT ON NATIONAL FOREST LAND, WEST VIRGINIA

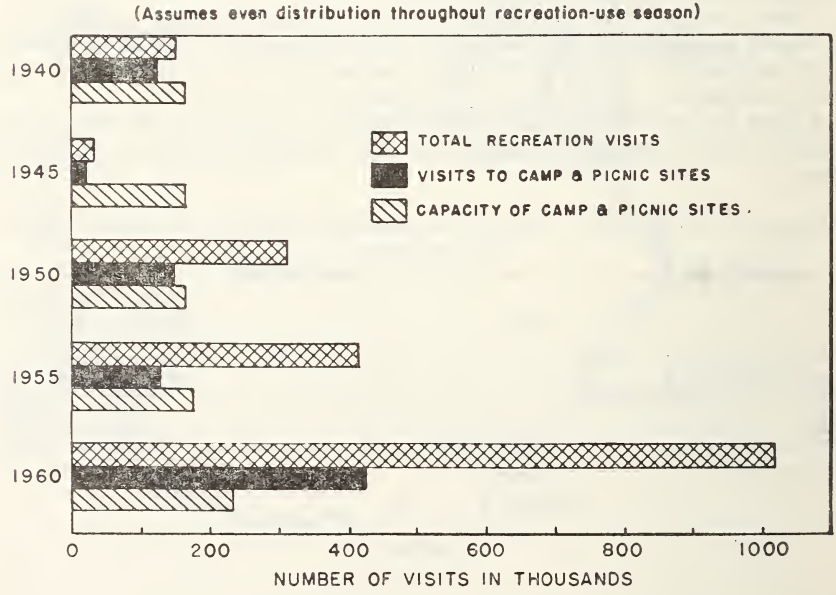


Recreation

Recreation use in West Virginia national forests totaled 1,094,000 visits in 1960, a 72-percent increase over 1950 and 86 percent above 1940. Half of these visits were for camping or picnicking.

Until 1957, the capacity of developed camp and picnic sites was adequate. Since that time, the increase in use has rapidly outdistanced the development of new sites until in 1960 it reached 170 percent of the safe carrying capacity of the facilities within developed camp and picnic sites. This relationship is shown in chart 2.

CHART 2.—RELATIONSHIP OF CAMP AND PICNIC-SITE CAPACITY TO RECREATION USE



Almost all of the improved recreation areas were constructed from 1931 to 1942 by the CCC program. During the Second World War, the areas were not maintained and only minimum maintenance was possible in the following 10-year period. Major rehabilitation of these facilities was started 5 years ago and is 70 percent completed.

Priority is given to care and policing of areas. However, it has not been possible to provide such important interpretative services as guided tours and nature trails.

OTHER LAND USES

The use of national forest land for purposes other than those usually recognized as ecological in nature has been accepted practice when such use has been economically or socially necessary. In the earlier history of the national forests, such uses were generally confined to small areas of cropland and residence sites for the local dependent population. In more recent years, the demand and need for land for nonforestry use has increased significantly (shown in table 2). Most of these demands can be integrated through multiple-use management with the various resource development programs.

TABLE 2.—*Special-use permits and easements on Monongahela National Forest*

	1951			1955			1959		
	Number	Acres	Miles	Number	Acres	Miles	Number	Acres	Miles
Special uses [1]	270	1,667	157	283	1,480	211	297	5,678	179
Gas and oil leases [2]	12	26,046	--------	53	84,956	--------	84	117,872	--------
Transmission and distribution lines	1	1	--------	1	--------	3	1	--------	3

[1] Includes a wide variety of land uses, some of the more common being agriculture and cultivation, mining and prospecting, pipelines, powerlines, telephone lines, roads, bridges, radio stations, and residences. Many of these do not require complete occupancy of the land area involved and do not conflict with other multiple-use management practices, such as wildlife, recreation, and water management.

[2] The number of oil and gas leases is expected to double during the next few years. Productivity from existing wells, all of which are in recently developed fields, will increase steadily as pipelines and pumping stations are developed to market the products. Development of the oil and gas resource of the national forest is favorable to the local economy. It stimulates business, produces employment, and brings in a steady flow of revenue to the counties. It fits in well with multiple-use management of the national forest resource, because only a small amount of the surface area is occupied.

Water

One of the principal purposes for the establishment of the national forests in West Virginia was the protection and improvement of important watersheds. Since the start of these forests, all forest management programs have had watershed protection and improvement as a major objective, and the general hydrologic condition has shown steady improvement. However, these programs were effective only where sufficient productive potential remained to justify immediate investment to timber or other resource use. On those areas where abuse had been so severe as to reduce the productive potential or seriously impair stream channel stability, little has been accomplished through ordinary management activities. Although the acreage in these critical areas is small in relation to the total forest area, most of them are located in the headwaters or so closely adjacent to streams that they trigger reactions out of all proportion to their size. This situation is further aggravated in many watersheds by the presence of intermingled areas of private lands on which little or no attempt at rehabilitation has been made.

In 1957, the Forest Service received its first appropriation for soil and water measures. This appropriation was specifically designed to rehabilitate areas that could not be reached with other appropriated funds. These funds have permitted limited corrective action.

Soils

Rapidly increasing intensity of use and management activities has shown the vital need for information on the characteristics of the soils upon which all multiple use and sustained yield management must ultimately rest. The national soil survey has been primarily concerned with farmlands, and little information exists on forest soils. A pilot soils study was started on the Monongahela National Forest in 1959 to determine the feasibility of conducting soils surveys of national forest land not covered by the national soil survey.

Grazing

Grazing use was one of the two leading activities of the Monongahela National Forest at the time it was established in 1920. There were 15,000 head of cattle, sheep, and horses under permit as late as 1935. Then, a steady and rapid decline began. In 1945, stocking totaled 7,600 head. In 1950, it was reduced to 3,900. By 1955, it had dropped to 2,000 head. The decline continued and, by 1960, it had stabilized at 1,100 head.

A dramatic change in forage supply was the basic cause of the substantial downward trend in livestock use. Prenational forest logging operations followed by uncontrolled fires left much of the area (which later became part of the Monongahela National Forest) with an abundant forage supply of brush, grass, and weeds. Protection from wildfire permitted natural plant succession to quickly convert the forage type to a hardwood forest.

Wildlife

Habitat improvements for fish and game were started as an active program in the 1930's during the era of the Civilian Conservation Corps. Stream improvement structures, small, clear-cut openings in the forest, and conifer planting for cover were the principal practices at that time. Although some of the stream devices and forest openings are serving a useful purpose today, most of them are ineffective due to lack of maintenance.

A cooperative agreement signed in 1945 between the Forest Service and the West Virginia Conservation Commission stimulated the wildlife program. This agreement recognizes the State as responsible for regulation of game and fish and the Forest Service as responsible for management of the habitat with State cooperation. An act by the West Virginia Legislature in 1951, known as the Stamp Act, requires a yearly fee of $1 to hunt or trap and $1 to fish on national forest lands. These funds, together with those from the Federal-aid program and the State's general license fund, have made possible an ever-increasing number of habitat betterment projects as follows: 850 food plot openings, 100 miles of hunter access roads, 100 miles of trails for sportsman distribution, 400 patches of conifer seedlings for winter cover, 14,000 apple trees released and fertilized to increase game food, 400 springs developed, 75 waterholes constructed to improve wildlife distribution, and 3 large fishing lakes constructed.

To supplement the direct improvement work, wildlife habitat has been improved on a much larger acreage of the national forests by coordination of wildlife needs with other Forest Service programs, principally timber management, engineering, special uses, recreation, and watershed management.

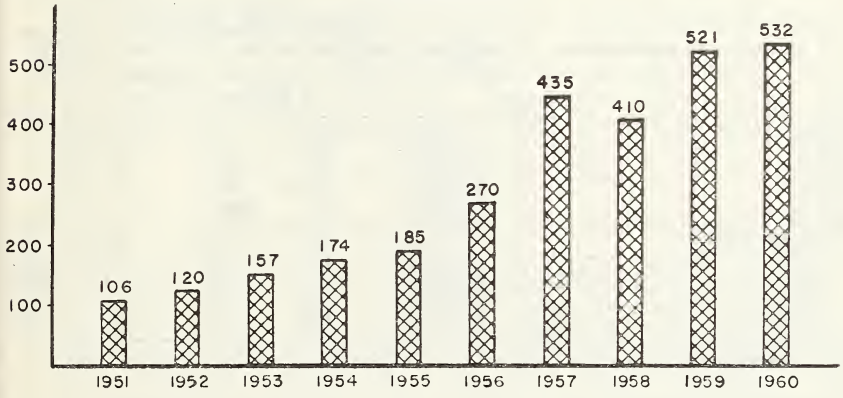
Deer, turkey, bear, squirrel, grouse, rabbits, furbearers (principally beaver and muskrat), trout, bass, and waterfowl are present on the forest where habitat is suitable. Hunter demand, however, is exceeding the supply.

Fishermen are also feeling the pinch of too little fishing water. Less than 10 percent of the streams are producing fish to maximum capacity due to habitat deficiencies, many of which can be corrected. The three lakes on the forest are inadequate to supply today's demand for lake fishing.

The 532,000 visits in 1960 by hunters and fishermen represent big expenditures of money which benefit the local economy. It is estimated that they spent approximately $4.3 million in 1960 within the forest zone of influence. Hunting and fishing has been steadily increasing, as shown on chart No. 3.

Chart 3.—Number of Visits for Hunting and Fishing

(In thousands)



Landownership

About 85 percent of the land within the forest boundaries is suitable for forest uses but only 60 percent of the suitable area has passed into Federal ownership. The ownership pattern varies from full Federal control of individual watersheds to one of divided multiple ownerships. Also, in many areas, outstanding mineral rights restrict full control of land use. Approximately 480,000 acres within the boundaries should be considered for purchase. The 904,000 acres now in national forest ownership is 9 percent of the 9,907,000 acres that comprise the total forest land area in West Virginia.

PROTECTION AND IMPROVEMENTS

The development and multiple use of the forest resources and their sustained growth and yield require protection from destructive agencies, both natural and human, as well as the construction or

development of facilities needed to support them. The following text, tables, charts, and statements show the growth and present status of these activities.

Fire

Large and destructive fires were frequent in the area before the establishment of the national forests. Early Forest Service efforts to reduce fire losses were handicapped by travel and access problems and by a lack of detection and communication facilities. Progress in fire control was slow until the advent of the Civilian Conservation Corps when it was possible to construct a small network of truck trails, lookout towers, and telephone lines.

With these improvements, it has been possible to provide reasonably adequate fire control under normal weather situations. In recent years, the increased use of radio for communications and the use of aircraft for detection and suppression has helped to reduce the size of fires and acreage burned. Table 3 shows the progress that has been made and also reflects the effective use of increased funds (see following page).

TABLE 3.—*Forest fire statistics on Monongahela National Forest, W.Va.*

Annual average (5-year periods)	Area protected (acres)	Average number of fires (per year)	National and private land inside area burned (acres)		Average yearly costs
			Average per year	Per fire	
1931–35	721,682	36	710	20	(1)
1936–40	1,300,669	35	667	19	(1)
1941–45	1,301,400	46	1,044	22	(1)
1946–50	1,284,104	29	258	8	(1)
1951–55	1,267,548	37	1,019	27	(1)
1956–60	1,259,039	18	160	8	$58,000
Last 5-year period:					
1956	1,260,832	26	478	18	46,000
1957	1,260,832	15	147	10	52,000
1958	1,272,867	6	8	1	55,000
1959	1,272,867	26	64	3	60,000
1960	1,227,800	19	105	6	78,000

[1] Not available.

Insects and disease

Insect and disease control was started on the Monongahela in the early 1930's with the initiation of ribes eradication for control of white pine blister rust. Control has been established on 96 percent of the 89,000 acres designated for the protection of white pine. The importance of white pine as a timber-producing tree justifies protection on all areas suited to the growing of this species. An estimated 10,000 acres should be added to the present controlled area including plantations and areas of natural regeneration.

Little has been done to control other forest pests on the Monongahela. Field observations indicate a general buildup of forest insects and diseases—oak wilt, oak decline, *Fomes annosus*, various rots, cankers, shoot and tip moth, white pine weevil, pine sawflies, and the black turpentine beetle.

Roads and trails

The Monongahela Forest transportation system of existing roads and trails was built by the Forest Service, State, counties, and other agencies. Records of construction costs by other than the Forest Service are not available. In the period 1931–41, many miles of single-lane roads were constructed by the Civilian Conservation Corps. Most of these roads are now of inadequate standards for present-day traffic. During World War II, construction of new roads was virtually at a standstill, but in a 2- or 3-year period after the war several roads were built with National Housing Administration funds. In the 10-year period beginning in 1950, a total of 67 miles of road were constructed or reconstructed with appropriated funds at an average cost of about $19,000 per mile. This cost includes all direct and indirect costs. Since 1946, the rate of road construction has been far under the pace needed for adequate development and use of resources.

Structures

The principal emphasis on structures to date has been directed toward lookout towers and telephone lines needed for fire protection. Very few general purpose improvements such as offices, shops, warehouses, and dwellings have been constructed. Since 1941, only 7 structures have been erected out of a total of 106 that are urgently needed.

RECEIPTS AND EXPENDITURES

During the fiscal year ending June 30, 1960, the Monongahela spent $793,864. This amount was used almost wholly within the State of West Virginia for wages and supplies—important items in the economy of the area. Of this amount, $333,709 was spent for improvement of roads, buildings, the timber stand, and other items of lasting value. This is in line with the business practice of putting part of the income into the business to improve and expand its ability to produce. The sum of $460,055 is considered as operating expense.

During the same period, the forest received $685,000. Of this amount, $442,000 was from sale of timber; $223,000 from sale of mineral resources, including natural gas and oil; and $20,000 from other uses. This income exceeded the cost of administration of these resources.

Chart 4 shows the growth of income from an annual average of $3,090 in the 1930's to $685,000 in 1960. This is indicative of what can be achieved by protection and management of forest land in the State. Income from national forest land of the George Washington National Forest situated in West Virginia is not included, as income is reported only by national forests.

CHART 4.—INCOME FROM USE OF FOREST LAND OF THE MONONGAHELA NATIONAL FOREST

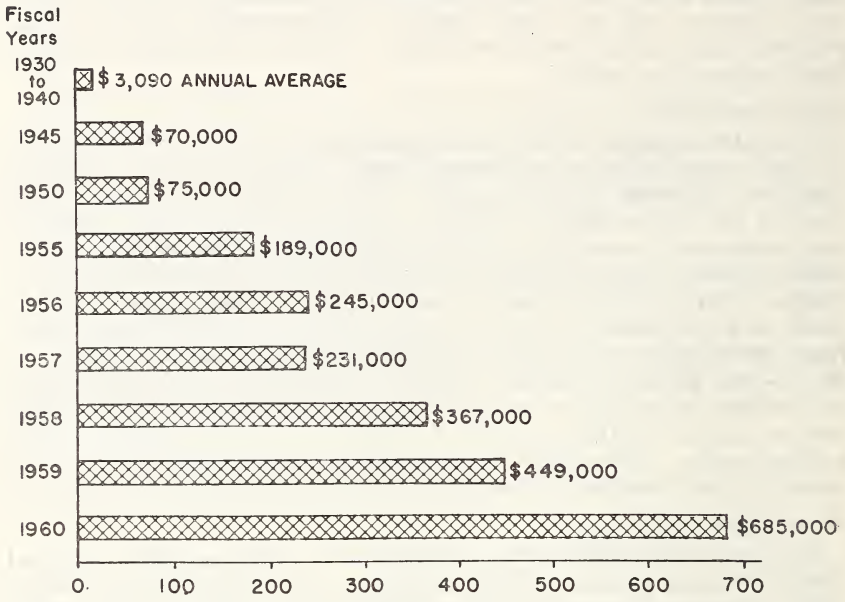


TABLE 4.—*Payments to States from the national forest fund, Monongahela National Forest*

[County distribution based on acreage of national forest land]

County	1945	1950	1955	1958	1959	1960
Grant	335	328	829	1,609	1,967	3,000
Greenbrier	2,340	2,297	5,804	11,269	13,775	21,014
Nicholas	556	545	1,376	2,669	3,263	4,977
Pendleton	1,402	1,398	3,553	6,853	8,377	12,782
Pocahontas	6,495	6,435	16,258	31,553	38,572	58,840
Preston	92	90	229	443	542	826
Randolph	3,958	3,956	10,005	19,409	23,727	36,203
Tucker	2,190	2,178	5,502	10,588	12,943	19,744
Webster	1,536	1,504	3,799	7,369	9,008	13,742
Total to State	18,904	18,731	47,335	91,762	112,174	171,128

NOTE.—Under a special law 25 percent of all revenue from use of national forest land received by the Monongahela National Forest is paid to the State for the benefit of schools and roads in the counties in which the national forest land is situated. The State distributes the payment to the counties according to State law. Table 4 shows the amount each county received during the selected years. The figures are for the Monongahela National Forest only and do not include the payment from national forest land of the George Washington National Forest situated in West Virginia.

FORESTRY RESEARCH

Since the middle 1930's some forestry research has been underway in West Virginia, a large part of it on the Monongahela National Forest. Studies of silviculture and watershed management have been emphasized and have helped answer some of the questions about better practices on national forests and adjacent areas. Research at other locations in West Virginia or nearby States have contributed to better protection and management of all forest resources.

Part II—The Look Ahead

It is clear that present management should be intensified to insure that the full capabilities and potential of the national forests are realized to provide the maximum returns in social and economic benefit. The following statements define, to the extent possible, the gap between existing levels of management and the intensity desired and required for optimum benefits and returns.

TIMBER

Present allowable cut from national forest land in West Virginia is estimated at 84 million board feet of timber products. The actual cut has averaged 28 million board feet over the past 5 years. Improvements in the market situation and a recent management survey indicate that the sawtimber cut can be tripled within the next 20 years. By the year 2000, it should be possible to market and maintain, under recognized forest management practices, a cut of at least 75 million board feet of sawtimber. Along with this increased sawtimber cut, a gradual increase in the demand for forest products other than sawtimber, primarily hardwood pulpwood, can be expected. By the year 2000, the annual cut of forest products should be approximately 100 million board feet—300 million board feet if markets for low-grade products were available.

The goals envisaged above are dependent upon an intensive development program. This program would encompass all phases of resource development. It means (1) improved accessibility through construction and betterment of an adequate road system; (2) increased protection from fire, insects, and disease; (3) expanded reforestation to put all potential acres to work; and (4) timber stand improvement measures to increase both quality and quantity of the larger timber products.

RECREATION

Within the next 40 years, recreation use of the West Virginia national forests will be eight times greater than in 1960. This estimate of increased use for outdoor recreation is related to four main factors:

1. Increase in the number of people who will be seeking recreation.
2. Increase in per capita real personal income.
3. Increase in per capita leisure time.
4. Increase in per capita travel.

In addition, the construction of new reservoirs and the improvement of the transportation system are major local factors that cannot be accurately foreseen but which will certainly tend to further increase the recreation use of the national forests of West Virginia by increasing their accessibility and the opportunities for recreation.

The West Virginia national forests include many excellent and unique recreation resources. The mountainous lands in these forests abound in fine recreation sites, splendid scenery, excellent hunting and fishing habitat, and a pleasant climate. They are relatively close to large urban populations and can make significant contributions toward

meeting the recreation needs of these urban areas. The recreation resources of these forests have been inventoried and evaluated, and it is confidently expected that they are sufficient to meet most of the anticipated needs on the national forests, provided that necessary access roads, new recreation facilities, accommodations, and services are provided. Some 9,000 additional family camping and picnicking units will be needed to meet the demand. In addition, scenic drives; overlooks; scenic, geological, and historical sites; and water sports areas are needed to make the fine recreation resources of these forests available for public use and enjoyment.

Commercial public service facilities (resorts, motels, restaurants, trailer camps, boat marinas, ski lifts, service stations, and the like) will be needed to supplement the facilities and improvements constructed and maintained with public funds. The Forest Service policy is to encourage construction and operation of necessary commercial public service facilities by private capital. In West Virginia there will be many opportunities for such developments on private lands adjacent to or intermingled with national forest land. Where privately owned sites are not available, national forest lands which are suitable for commercial public service sites may be made available under special land-use permits.

SOIL AND WATER

Included within the Monongahela Forest are the headwaters of three principal rivers—the Potomac, the Monongahela, and the Kanawha—each of which has problems of water quality, inadequate flows, and flooding. Any future development of the areas supplied by these rivers will be largely influenced by the extent to which these problems can be solved to provide a safe, dependable supply of high-quality water for domestic and industrial use. To achieve this objective a large backlog of projects consisting of flow regulation dams, channel and streambank stabilization works, and land treatment measures need to be done.

The information already gathered by the pilot soil survey and its daily use in multiple-use management demonstrates the necessity for continuing the survey on all national forest lands. In addition to making possible more productive use of the land, it shows when and where special measures are needed to protect watershed values and has improved the efficiency of many management operations by reducing the necessity for empirical methods. One-tenth of the national forest area in West Virginia has been surveyed. The remainder needs to be completed as rapidly as possible so that this essential basic information can be in the hands of every forest manager at the earliest possible time.

GRAZING

The forest multiple-use plan recognizes the need for maintaining a basic level of forage supply, both to sustain locally dependent farmers and to continue its contribution to other multiple-use values. Because of the adverse effect of free-ranging stock on other forest values, the goal is to eliminate open-range grazing on the 5,500 acres of land presently assigned to livestock use under 32 allotments and to practice improved pasture management within fenced areas. During

the last 5 years, about half of the area has been fenced, and pasture improvements, including watering facilities, have been installed. The job for the future is to complete these improvements for the other half as soon as possible.

WILDLIFE

By 1976 hunters will experience a shortage of space, and fishermen will find a considerable shortage of fishing waters if present standards of harvest success are to be maintained without depleting the wildlife base.

This projection assumes that habitats not now used to capacity can accommodate the public at the same rate as those areas where the capacity has been reached. In order to accommodate the projected demand for hunting, about 70 percent of the forest's hunting acreage will need substantial improvements. To meet fishing demands, new lakes must be created and every acre of present streams and lakes brought to full fishing potential. To redeem National and State responsibilities in the field of wildlife management will require both an acceleration of the cooperative program with the State and a greatly increased Forest Service program in terms of planning time and habitat improvement money.

Past and present programs have given inadequate attention to that segment of the public which enjoys the wildlife of the national forest by means other than hunting, fishing, and trapping. Thousands of recreational visits made primarily for other purposes are enhanced by the opportunity to observe wildlife with no thought of harvesting it. Many groups equipped with binoculars and cameras visit the forest primarily for wildlife observation and study. Organized bird clubs are a particularly significant group.

The Forest Service should provide better services in the way of informational leaflets explaining where particular species are likely to be found at certain times of the year, checklists of birds seen on the forest, scientific studies being conducted by specialized interests, and the like. These things could be done and guided tours could be arranged if the forest were equipped with sufficient personnel to provide these needed services.

LAND ACQUISITION

Situated within the present proclamation boundaries of the Monongahela National Forest are many privately owned properties similar to the land in Government ownership. The total acreage of such "inholdings" that should be acquired in order to facilitate administration, improve the landownership pattern, and to bring areas that should be managed for continuous multiple-use production into public ownership is about 480,000 acres. It includes culled and cut over tracts of forest land, varying in size from a few acres to fifty to sixty thousand acres. Among these are tracts important for future public use as recreation areas, and also tracts which present special problems in management, such as those which contribute excessive amounts of siltation to streams. In many instances, the properties which comprise these inholdings are intermingled with and adjoin national forest holdings in such a manner as to constitute a broken or "patchwork" ownership pattern.

Acquisition of these privately owned lands by the Government would make these additional areas available for public use and would bring under management a large acreage of forest lands which probably will not receive effective management based on long-term objectives except by means of management by a public agency. It should be recognized that there would result, in proportion to the lands so acquired, additional needs for establishment of recreational facilities, roads and other improvements, and for resource restoration such as forest planting and wildlife habitat betterment. There would result also a proportionate upbuilding of a larger permanent resource base for a part of the State in which the national forest lands are situated.

FIRE

Although great progress has been made in reducing fire losses, more intensive effort is needed in the future. The present organization and facilities are not adequate for above-normal burning conditions which occur periodically. Increased use of the forests, which results in the presence of many more people and more varied and heavier industrial activities, will tend to create greater risk of fire occurrence. The values of the forest land and the physical facilities located on them are constantly increasing. If the forests are to produce maximum results in products and services, reliable fire protection is essential.

INSECTS AND DISEASE

Blister rust

Blister rust damage has been held to a low level on the present white pine area as a result of properly spaced surveys and control operations. These surveys must be of a continuing nature to establish and maintain control of the disease on all areas suited for white pine production. It is estimated that 100,000 acres of national forest land may justify control measures.

Oak wilt and oak decline

Trees in the red oak group are found on approximately 200,000 acres. Two important diseases are threatening these trees: oak wilt and oak decline. Aerial surveys coordinated with ground checking should be intensified. Control measures for oak wilt would then conform to procedures as outlined by the West Virginia Department of Agriculture. Oak mortality areas may be salvaged and converted to coniferous species.

Various rots and cankers

Sanitation measures can be applied to rot and canker infected hardwood areas. It is estimated that 175,000 acres are in need of such treatment. The results of removing cull trees are twofold: (*a*) release of reproduction and overtopped healthy trees, (*b*) reduction of inoculum.

Other pests of conifers

Pines are found on approximately 100,000 acres of the Monongahela. Pest surveys are needed to determine the location and intensity of—

Fomes annosus (yellow and white pines)
Shoot and tip moth (yellow pines)
Pine sawflies (yellow pines)'
White pine weevil (white pine)
Black turpentine beetle (yellow and white pines)

FORESTRY RESEARCH

A greatly increased fund of knowledge is necessary for rapid and sound progress toward the protection, development, and utilization of forest resources in the years ahead. A balanced research program can put a solid basis under intensified timber and watershed management; protection of forests from fire, insects, and diseases; can aid in sound recreational and wildlife habitat development; provide better markets and methods of utilizing forest crops; and contribute in many ways to more intensive multiple-use development of the national forests. In West Virginia stepped-up research program should be developed in timber production and watershed management, wildlife habitat, forestry economics, and market development for forest products. Adequate research laboratories and related facilities are needed to insure rapid progress.

The total investment of private capital in commercial facilities needed to serve the public in connection with national forest recreation might well equal or even exceed the investment of public funds in the development of recreation resources. Public and private investments will support each other.

A big and challenging job is ahead to plan and develop the recreation resources of the national forests of West Virginia for the enjoyment of the public and for the economic benefit to local communities. The Forest Service recreation plans will be prepared to accomplish this purpose.

OTHER LAND USES

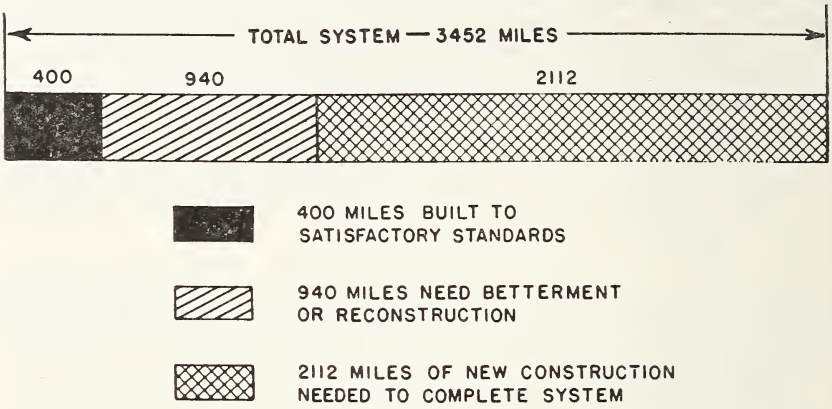
Pressure on the land to provide for nonforestry uses is expected to become greater in the future. Roads, airfields, pipelines, powerlines, water impoundments, building sites, radar, radio and television structures, mines, oil wells, and similar uses will require land. Meeting these requirements at minimum cost to the production of forest values will take greater effort in planning, designing, controlling, and integrating them. These uses contribute materially to the economy but they must be kept in balance with the basic needs of good land management.

ROADS AND TRAILS

For full development of the resources of the Monongahela, the approved transportation plan projects a system of 3,452 miles of roads and 696 miles of trails. About 400 miles of existing roads are built to adequate standards. An additional 940 miles are in need of betterment or reconstruction. (See chart No. 5.)

The forest transportation plan is designed to service safely and economically all foreseeable needs of responsible land management, protection, and full utilization of all resources. Construction of access roads is a vitally needed initial step toward full development and utilization of the forest resources. New road construction should precede development of resources by at least 1 year to allow for stabilization and application of surfacing.

CHART 5.—STATUS OF APPROVED ROAD TRANSPORTATION SYSTEM IN WEST VIRGINIA


TOTAL SYSTEM — 3452 MILES
400
940
2112
400 MILES BUILT TO SATISFACTORY STANDARDS
940 MILES NEED BETTERMENT OR RECONSTRUCTION
2112 MILES OF NEW CONSTRUCTION NEEDED TO COMPLETE SYSTEM

The 696 miles of trail are existing with about 85 miles in need of reconstruction. This trail system mileage will diminish to some degree as new road construction replaces trails as land access routes.

STRUCTURAL IMPROVEMENTS

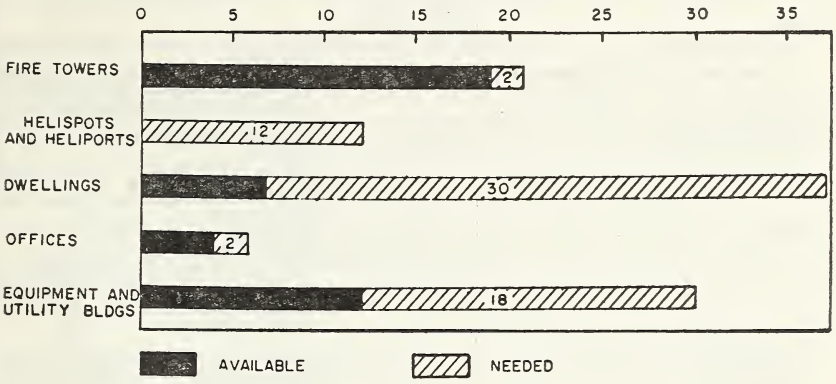
Dwellings, offices, and utility buildings at the district headquarters are urgently needed. All of the headquarters are located in small towns (1,000 to 5,000 average population) where adequate offices, workshops, and dwellings are not available for rent. The proposed program will necessitate the recruitment of professional employees, some of whom will not be available in local areas. Housing will be a key factor to securing supervisory personnel.

A recent comprehensive study of the fire control activities disclosed that two additional towers were needed to provide necessary detection services.

The buildup in use of the national forests substantially increases fire risks. A step-up in the initial attack on fires will be needed to maintain losses at an acceptable minimum. The recent study showed the need for air attack from helispots and heliports to be constructed in remote locations in the forest.

Chart 6 shows the present inventory of structural improvements and additional requirements to meet the increased program during the next 5 years.

CHART 6.—NUMBER OF STRUCTURAL IMPROVEMENTS



PART III—THE PROGRAM

This section of the report summarizes in terms of manpower and dollars the program needed for intensive development and management of the national forest lands in West Virginia. Where long-range plans have been developed for projection of needs to the year 2000, it is indicated under "Remarks" column in table 5.

TABLE 5.—*Accelerated total 5-year program of national forest land in West Virginia*

Item and project	Recurrent [1]	Nonrecurrent [1]	Remarks (work needed)
	Thousands	*Thousands*	
Timber:			
Sales administration	$662		Cut 50 million annually—ultimate goal, 300 million.
Reforestation and stand improvement		$2,160	Plant 10,000 acres, cultural treatment 160,000 acres—ultimate needs 20,000 acres planting, 320,000 acres cultural treatment.
Recreation:			
Care and policing	1,450		Maintenance, sanitation, and cleanup of facilities.
Development		12,000	Construct 9,000 family units—ultimate needs are 18,000 family units, 2 winter sport areas, 14 organization camps, and related facilities.
Wildlife	660		Management and administration of wildlife resource.
		2,500	Improve 20,000 acres habitat, 100 miles of stream, and 500 waterholes—ultimate needs 26,000 acres habitat, 180 miles of stream improvement, 10,000 waterholes, food plots, and lakes.
Range resource:			
Management	75	10	Management and administration of range resource, complete analysis of 10 allotments—ultimate needs 40 allotments.
Revegetation		40	Revegetate 7,000 acres.
Soil and water	300		Maintenance of improvements and administration of soil and water resource.
		6,500	Rehabilitate 5,000 acres of eroded land and 200 miles of stream channel, conduct 400,000 acres soils surveys—ultimate program rehabilitation 20,000 acres of eroded lands and 750 miles of stream channel, construct 73 impoundments, conduct 800,000 acres of soil survey.
Mineral leases and other land uses	125		Administer leases and special uses, maintain property lines and administer exchanges.
		85	Topographic mapping of 80,000 acres—ultimate needs 900,000 acres.
Forest fire protection	450		Intensify protection from fires.
Structural improvements for fire and general purpose.	300	980	Maintain existing and proposed structural improvements; construct 30 dwellings, 2 towers, 12 helispots, and 20 utility buildings—ultimate additional needs: 48 dwellings and 34 utility buildings.
Insect and disease control	230		Intensify detection, prevention and control of insects and diseases.
Total protection and management	4,252	24,275	
Forest research program:			
Silviculture	600		
Watershed management	600	90	
Wildlife habitat management	300		
Market development	1,000	250	
Forest economics	450		
Forestry engineering	1,800		
Experimental forest pilot development	375	800	For roads, stand improvement and other developmental costs.
Total forest research program	5,125		
Research construction		860	For research laboratories and related facilities at 3 locations.
Forest roads and trails:			
Construction		13,500	Construct 675 miles of roads—ultimate system needed: 3,452 miles.
Rehabilitation		5,500	Rehabilitate 940 miles of roads.
Maintenance	658		
Total forest roads and trails	658	19,000	
Grand total	10,035	45,275	

[1] Includes last quarter of fiscal year 1961.

The estimates for the research program include the needs for all forest land of West Virginia because the research required for development of the national forests will benefit other forest land management efforts as well. The research program cannot reasonably be broken down to represent only that fraction applying to national forests.

PROGRAM BENEFITS

Under the proposed 5-year program, management and utilization of national forest resources will catch up and keep pace with population demands and economic development and needs. Benefits will accrue from—

(1) Direct financial revenues to the Federal Treasury. Improvement of the productivity of the national forests will contribute toward tripling current receipts to about $2.1 million by the year 2000. About 70 percent of such revenues will come from the sale of timber. By the year 2000 national forest timber sales should reach 75 million board feet annually of sawtimber, worth about $1.5 million at 1960 prices. Payments from national forest revenues for county schools and roads will increase correspondingly.

(2) Increased capital value of the resources and improvements on these Federal properties in the amount of about $45 million.

(3) Providing employment for 7,000 to 10,000 people during a period of high unemployment. Increased employment will result from work on the national forest program; harvesting of national forest timber and other products; manufacture, distribution, and marketing of forest products; and increased use of the national forests by hunters, fishermen, and tourists.

TABLE 6.—*Breakdown by fiscal years of accelerated program for national forest land in West Virginia*

[In thousands of dollars]

Item and project	Fiscal year 1962 [1]		Fiscal year 1963		Fiscal year 1964		Fiscal year 1965		Fiscal year 1966		Total	
	Recurring	Nonrecurring	Recurring	Nonrecurring	Recurring	Nonrecurring	Recurring	Nonrecurring	Recurring	Nonrecurring	Recurring	Nonrecurring
Timber resources management:												
Sales administration	112		126		132		142		150		662	
Reforestation and stand improvement		304		411		465		465		515		2,160
Recreation:												
Care and policing	250		300		300		300		300		1,450	
Development		500		2,000		2,500		3,500		3,500		12,000
Wildlife habitat management:												
Administration	120		120		120		150		150		660	
Development		300		400		600		600		600		2,500
Range resource:												
Management	15	10	15		15		15		15		75	10
Revegetation		10		20		10						40
Soil and water:												
Administration	60		60		60		60		60		300	
Development		200		800		1,000		2,000		2,500		6,500
Mineral leases and other land uses	25	10	25	15	25	20	25	20	25	20	125	85
Forest fire protection	90		90		90		90		90		450	
Structural improvement for fire and general purposes	50	130	60	230	60	220	60	200	70	200	300	980
Insect and disease control	46		46		46		46		46		230	
Total protection and management	768	1,464	842	3,876	848	4,815	888	6,785	906	7,335	4,252	24,275
Forest research program:												
Silviculture	120		120		120		120		120		600	
Watershed management	120	50	120	40	120		120		120		600	90
Wildlife habitat management	60		60		60		60		60		300	
Market development	200	100	200	150	200		200		200		1,000	250
Forest economics	90		90		90		90		90		450	
Forest engineering	360		360		360		360		360		1,800	
Experimental forest pilot development	75	100	75	150	75	150	75	200	75	200	375	800
Research construction		360		500								860
Total, research	1,025	610	1,025	840	1,025	150	1,025	200	1,025	200	5,125	2,000

Forest roads and trails:												
Construction		400		1,200		3,500		4,000		4,400		13,500
Rehabilitation		2,200		1,100		1,100		550		550		5,500
Maintenance	80		100		130		160		188		658	
Total, forest roads and trails	80	2,600	100	2,300	130	4,600	160	4,550	188	4,950	658	19,000
Grand total	1,873	4,674	1,967	7,016	2,003	9,565	2,073	11,535	2,119	12,485	10,035	45,275

[1] Includes last quarter of fiscal year 1961.